

RICE UNIVERSITY

**Face Down / Ground Up:
Activating the Sixth Facade and Amplifying Public Space**

by

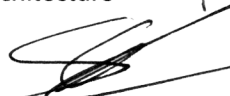
Courtney Elizabeth Benzon

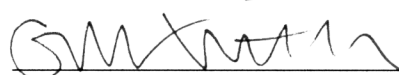
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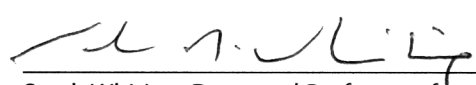
Master of Architecture

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ABSTRACT

FACE DOWN / GROUND UP:

Activating the Sixth Facade and Amplifying Public Space

by Courtney Elizabeth Benzon

This thesis condenses open public space on an urban site in order to create an animated environment for public use. Maximizing use of an open lot in São Paulo, Brazil, an elevated concrete plate layers the site into a covered plaza below with sport and recreation program above. By lifting a programmable ground surface above street level, the project maintains the ground plane as an extension of the urban surroundings. The underside of the elevated plate becomes a horizontal elevation, or sixth façade, which is the new public interface of the project. Essentially a double-sided surface that is formally manipulated, the elevated structure both defines and unifies the two zones, mediating between them while creating different conditions and atmospheres, each with their own potential to invite public activity.

ACKNOWLEDGEMENTS

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To the places that influenced this thesis. Rice University, for being a serene and supportive setting. The little five-year old girl I once was is now happy to join my father as a Rice grad. To Houston, my quirky hometown, because no matter how hard I try to leave, I keep coming back and love it more with each return. To São Paulo, which inspired this thesis, and its architects (Lina Bo Bardi, Vilanova Artigas, Paulo Mendes da Rocha, and Oscar Niemeyer), who made it a city full of delightful surprises.

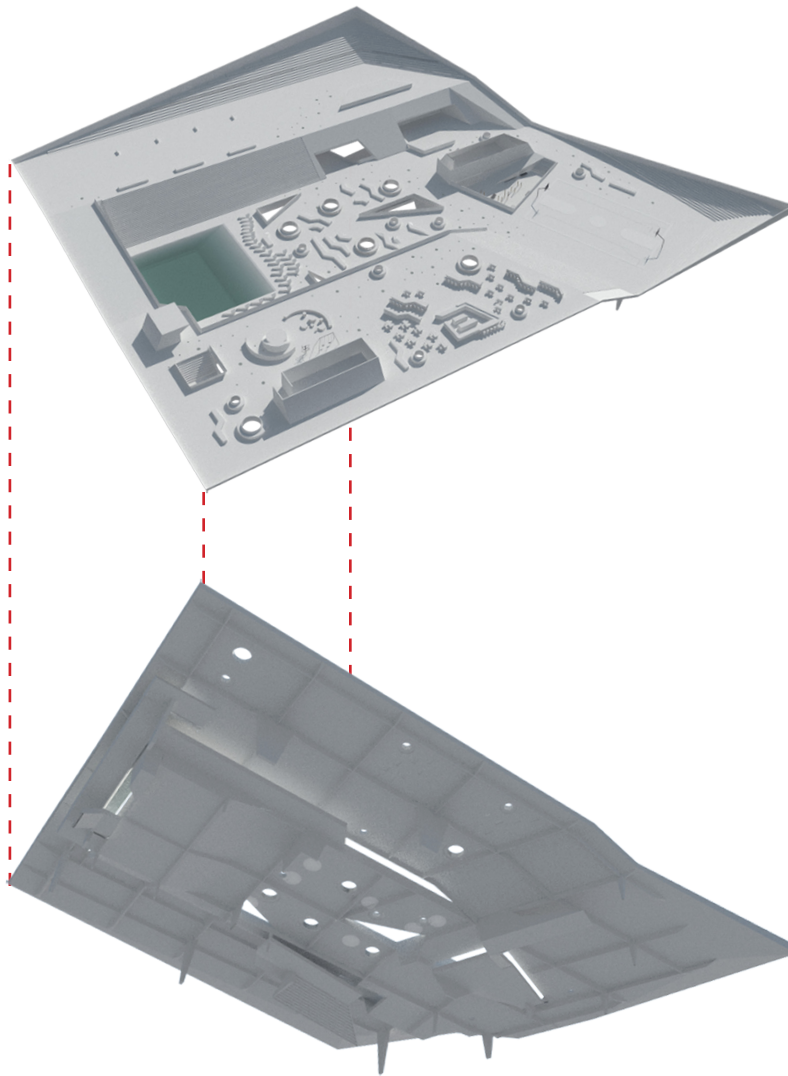
To my favorite sister, Caitlin, for your sympathetic ear and for the little things, like bringing me food late at night. To my grandparents, for always being there for me, even when I seemed too busy to pay attention. Finally, to my parents. You always encouraged me to follow my own path and take advantage of new opportunities. Without your unquestioning love and support, I would not be where I am today. I also have to thank you for Brazil - it was such a great adventure. Muito obrigada por tudo.

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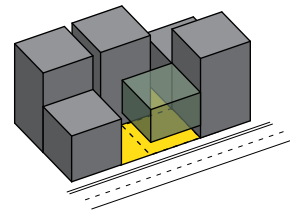
FACE DOWN / GROUND UP

activating the sixth facade and amplifying public space

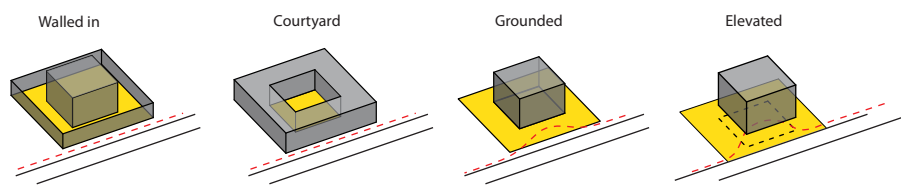


1 INTRO

In a vibrant and densifying mega-city such as São Paulo, Brazil, open space is highly valued but increasingly rare. As large industrial areas are gentrified into high rise condominiums and shopping malls, the ability to reserve large swaths of land for public space becomes unlikely while the need for it grows with the city's population. In this setting, then, what are the new possibilities for creating or preserving outdoor space for public use?



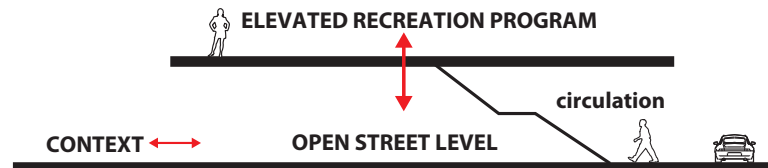
This thesis, located in a developing district of São Paulo, proposes an elevated structure, essentially a concrete plate, that provides the space and setting to generate public activity. Lifting a building or structure off the ground, in the setting of a dense urban environment, creates new program without monopolizing the ground plane. By rethinking how the ground is occupied, it invites the context to flow through, blurring the distinction between project, site, and city.



Typical ways a building can sit on its site, with increasing degrees of openness at the ground plane, determining the level of integration with context.

DOUBLE-SIDED PLATE

Previously embedded in the foundation, the elevated floor plate has two surfaces facing separate zones. As a double-sided plate, it acts simultaneously as ceiling, floor, and facade, organizing open space and public activity both above and below. The open street level, as an extension of the surrounding urban context, has the character and function of an urban plaza. Above, the plate provides space for recreation.



Elevated plate diagram

Visitors enter the site to either pass through, participate in the user-driven events in the open spaces below, or move up into the structure. The intersection of these activities and circulation patterns turns the site into a dynamic place - full of movement, people, and energy.

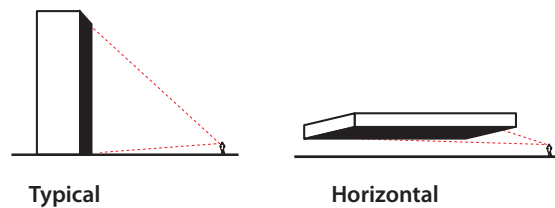


Evening activity at the metro station across the street from the site.

HORIZONTAL ELEVATION, OR SIXTH FACADE

The underside of the elevated plate, the sixth façade, takes on the role of a typical façade, being the primary interface between the project and the public. Subverting the verticality and exteriority of the typical elevation by turning it into a horizontal and interiorized plane, the project flips the orientation of a visitor approaching the project. In order to fully see or experience this surface, which is facing the ground, the visitor must enter onto the site, experiencing it from within (versus across the street).

A new elevation:



By exploiting the potentials of an elevated plate and the agency of the sixth façade in relation to public activity, the project becomes a vibrant place that contributes to the life and health of the city and its inhabitants.

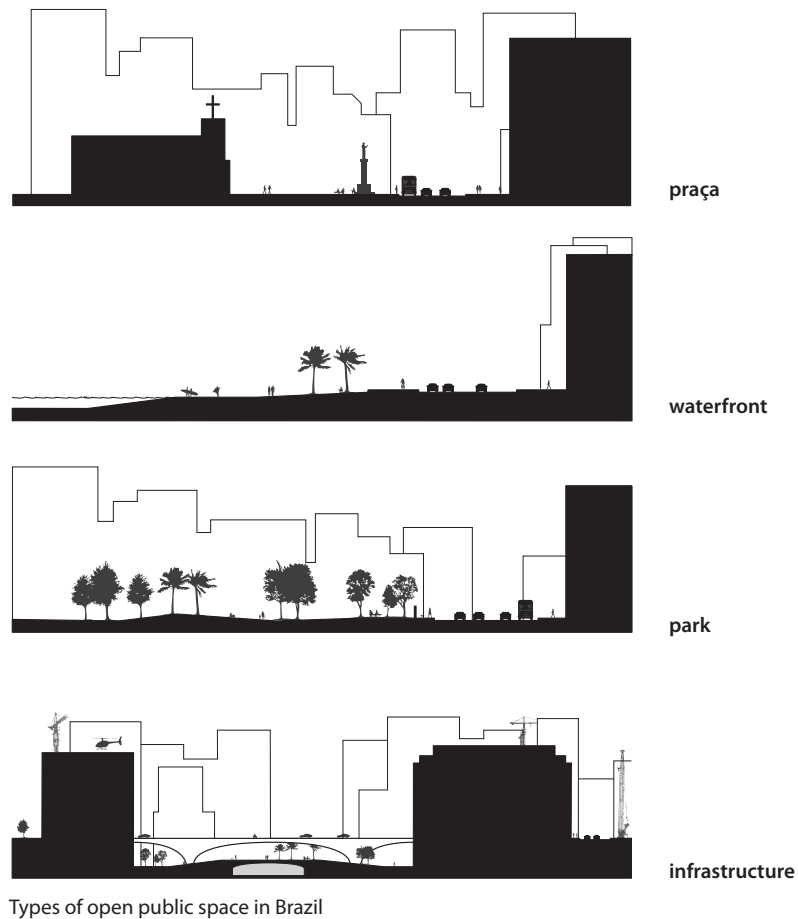


Perspective view from the main avenue that passes by the project.

2 URBAN PLAYGROUNDS

PUBLIC SPACE IN BRAZIL

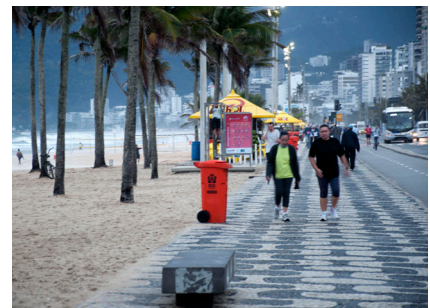
The existing culture of outdoor leisure and recreation that is very strong in Brazil supports the intensified public environment this thesis proposes. Living in such a temperate climate, Brazilians have an easy going attitude towards the outdoors and outdoor public spaces are very popular, especially for recreation and public events. They act as nodal gathering spots for urban citizens to escape their enclosed living or work environments to enjoy their free time. The atmosphere of these spaces, dependent on their size and settings, are each conducive to various activities.



Praca de Sé, São Paulo



Park under Viaduto do Chá, São Paulo



Ipanema beach, Rio de Janeiro

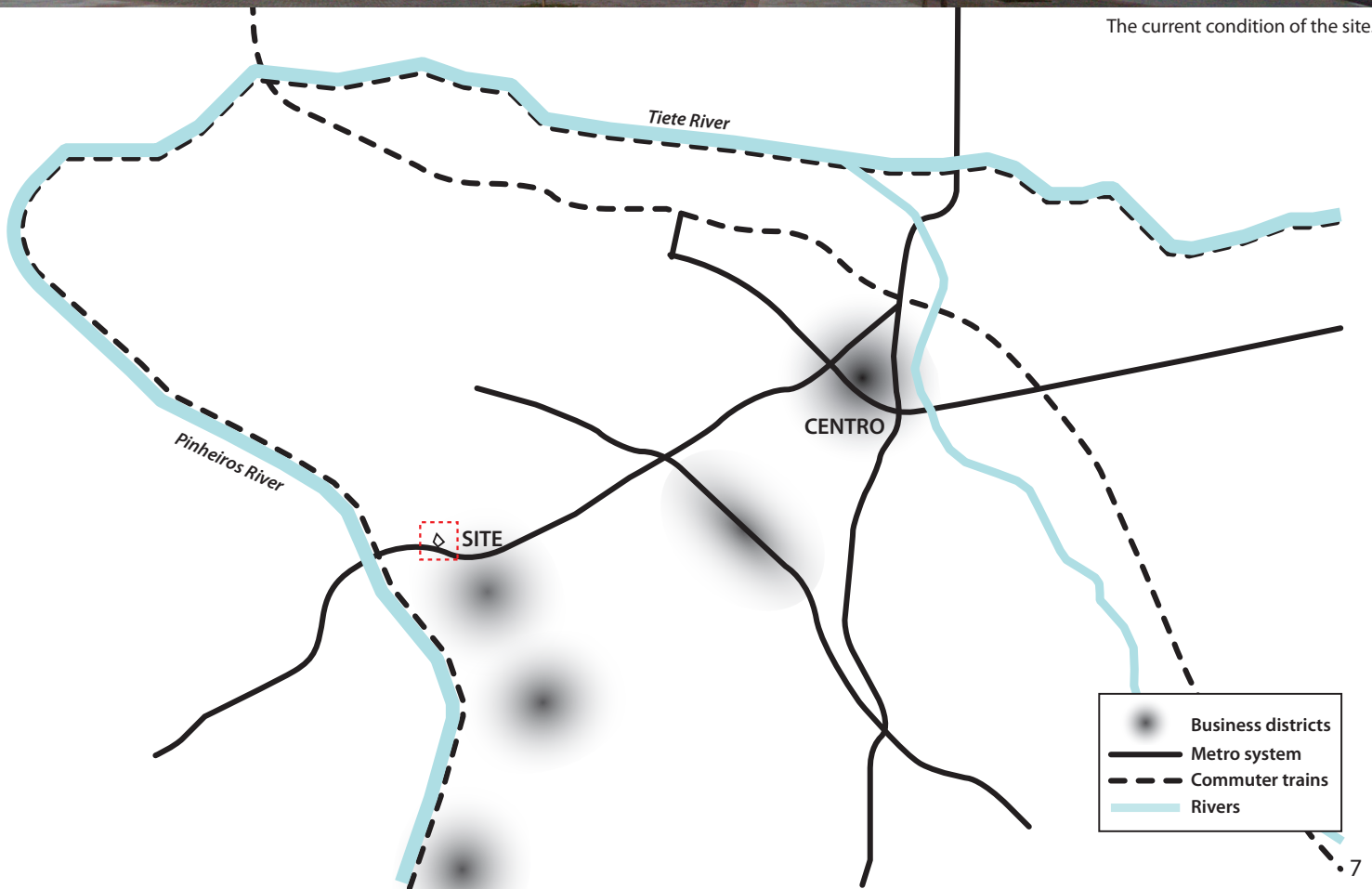
THE SITE

The city of São Paulo, already among the world's largest cities, is still growing and developing. Being a major financial center and a sprawling megacity, it has millions of commuters constantly moving through it. However, as much as they are known for working hard, Paulistanos also love to play. On weekends, the city is transformed into an urban playground. Parks and streets are taken over by cyclists and joggers, and cafes are full of families and friends, eating and drinking all afternoon.

This project's site is located in between the Pinheiros River and downtown. The primary crossroad, Faria Lima, and its surroundings are in transition from industrial riverfront and older residential fabric to new tower developments. Already a major bus hub, this site is now adjacent to a stop on the new metro line, which feeds into and spits out a constant flow of people and transportation.

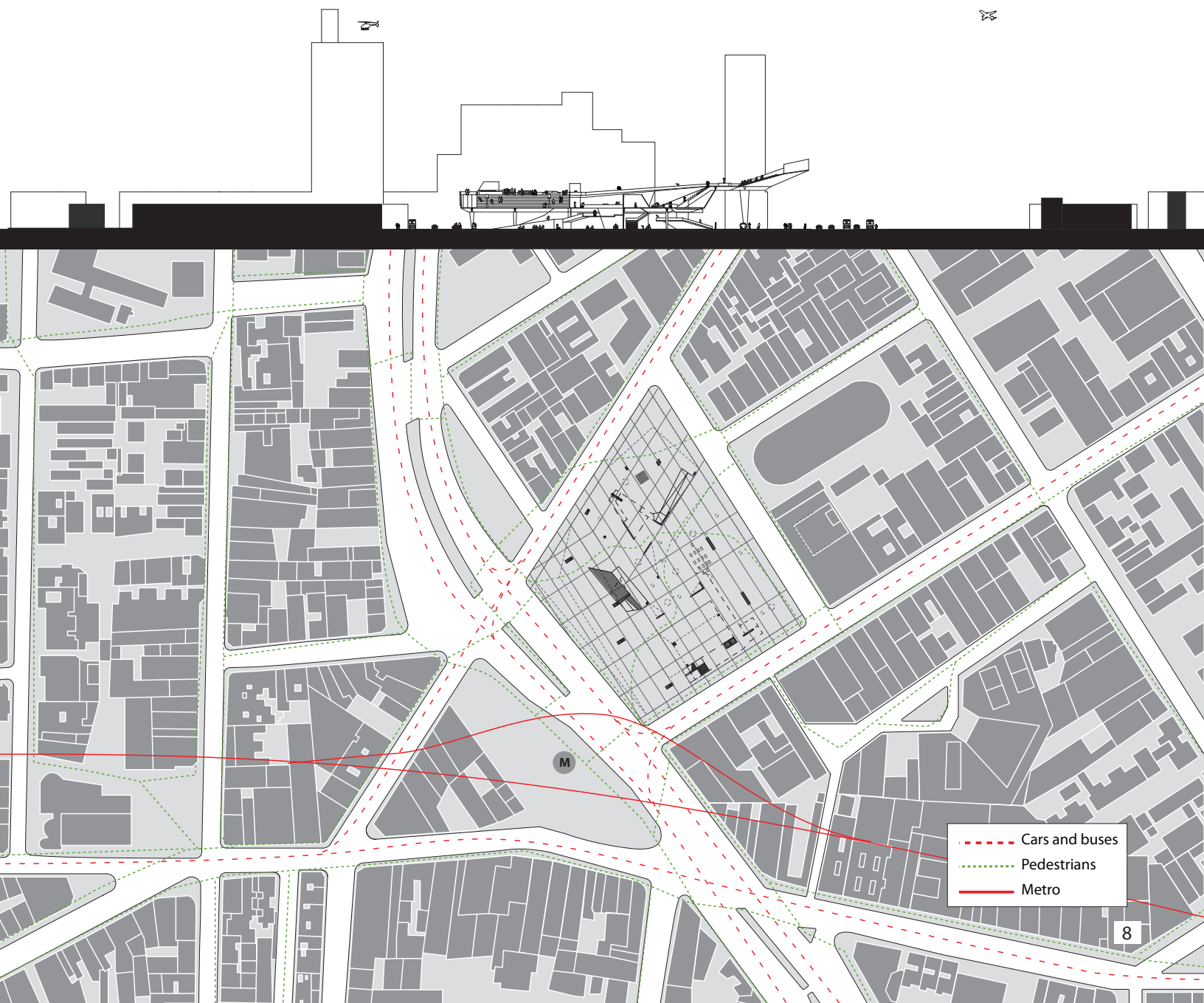


The current condition of the site.



THE GROUND PLANE

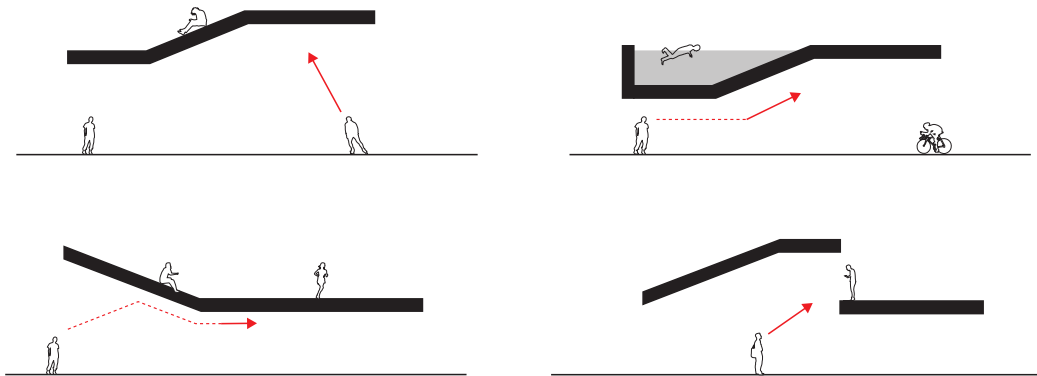
Integrating an open street level as an extension of the surrounding context takes advantage of the area's existing energy and activity. Pedestrian traffic, commuters, and residents move around and through the site, making it a likely place for user-defined activity. The ground plane itself remains a flat surface loosely defined from above by the sixth façade. Its circulation and structural points and varying heights differentiate the spaces.



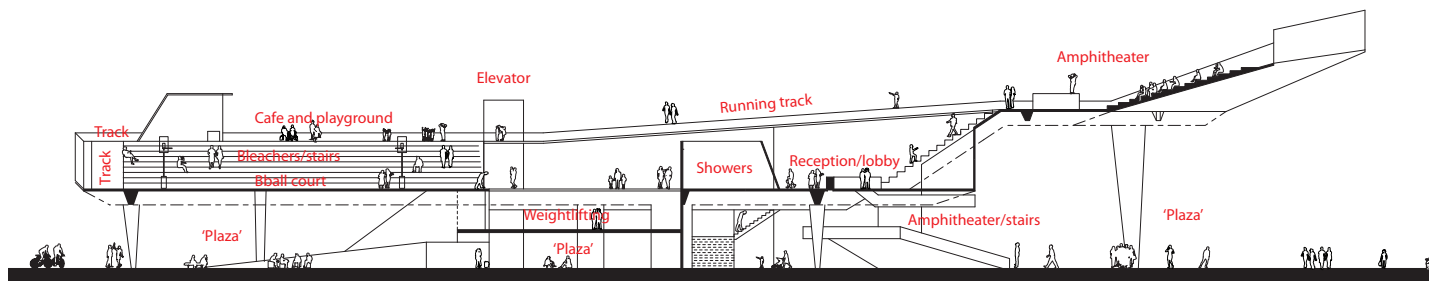
3 AMPLIFIED ACTIVITY

FORMAL MANIPULATIONS

The elevated plate and its sixth facade invites, reveals, accommodates, and spatializes collective activity through formal manipulations of its surface. Variations in the plate architecturally delineate the two levels while mediating movement between them and sight lines across them. Each of these moves relates to both sides, accommodating specific program on top of the plate and loosely defining the spaces at ground level.



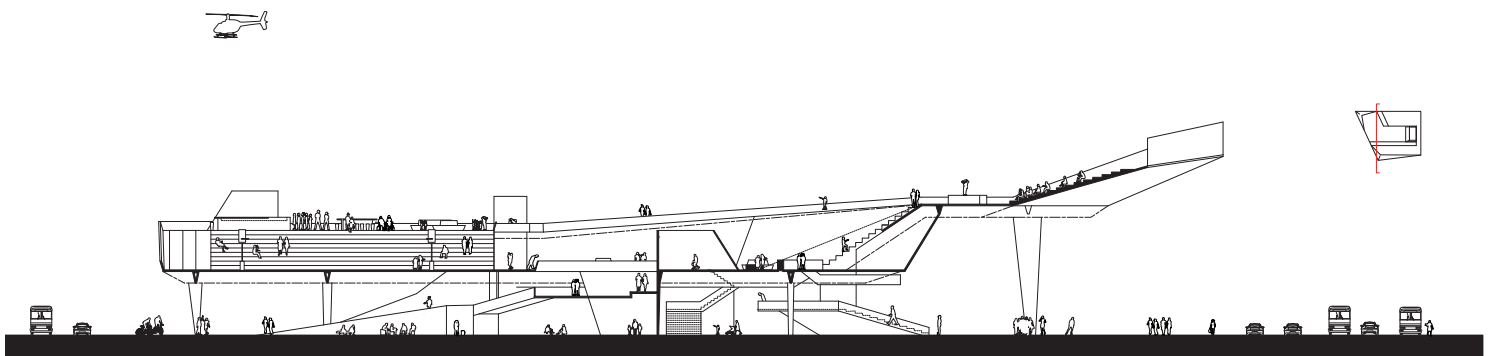
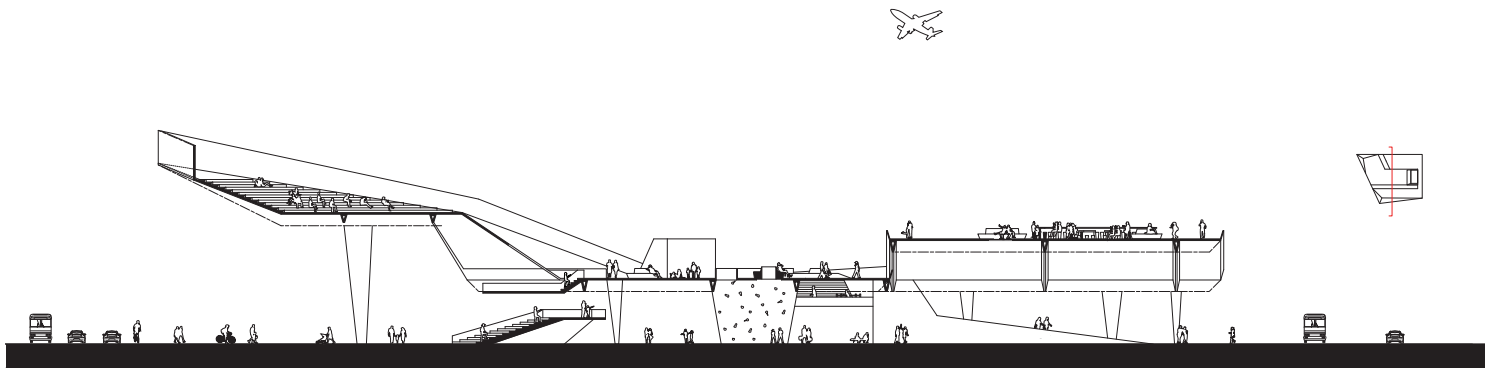
Folds and creases in the plate accommodate specific program activity above while creating varying spatial relationships below.



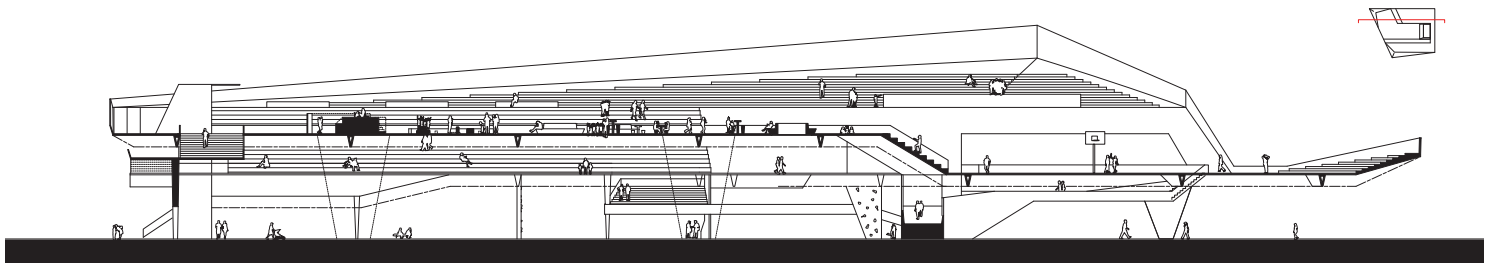
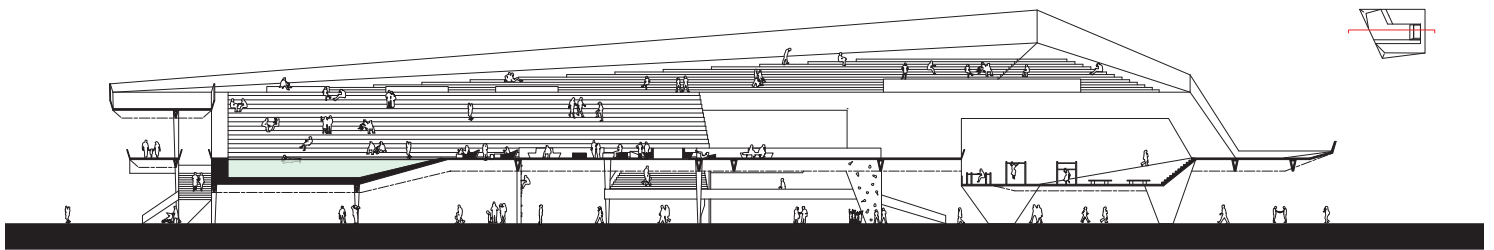
Sectional relationship of activity areas.

SECTIONS

The smaller sectional moves aggregate into a creased and folded plate. The fluctuating geometry differentiates the programmatic spaces while maintaining spatial and visual continuity. Activities are accommodated individually but always occur in relation to other activities or spaces.

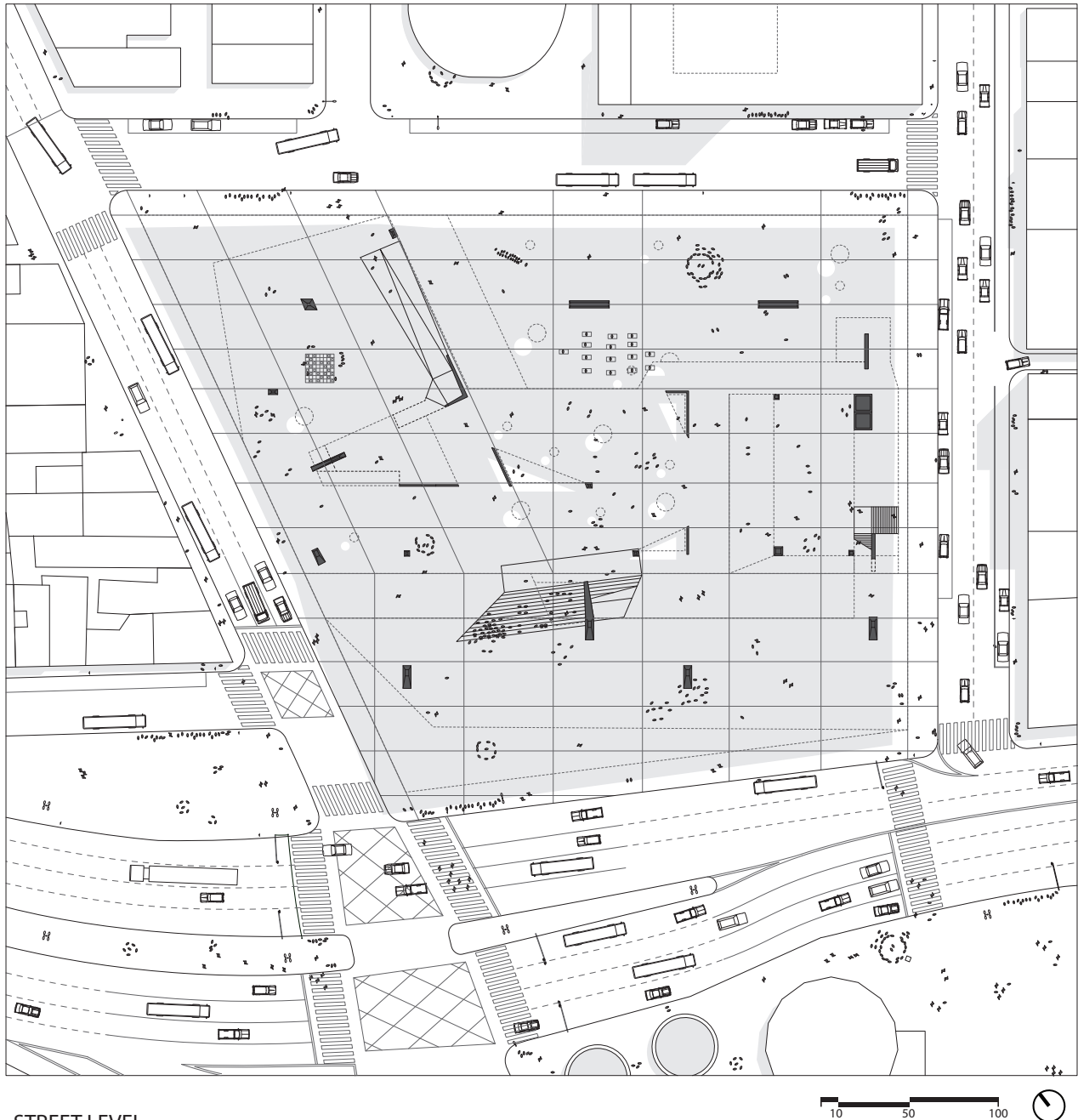


CROSS SECTIONS



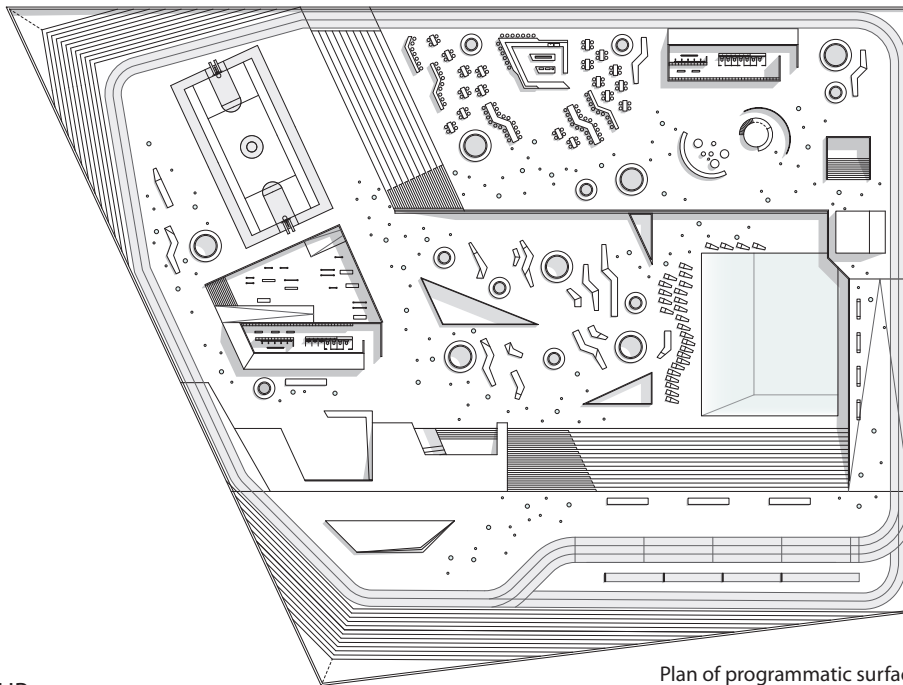
PLANS

In plan, the elevated plate translates into three surfaces that mirror one another. They exhibit their own individual qualities but demonstrate different aspects of the project.



STREET LEVEL

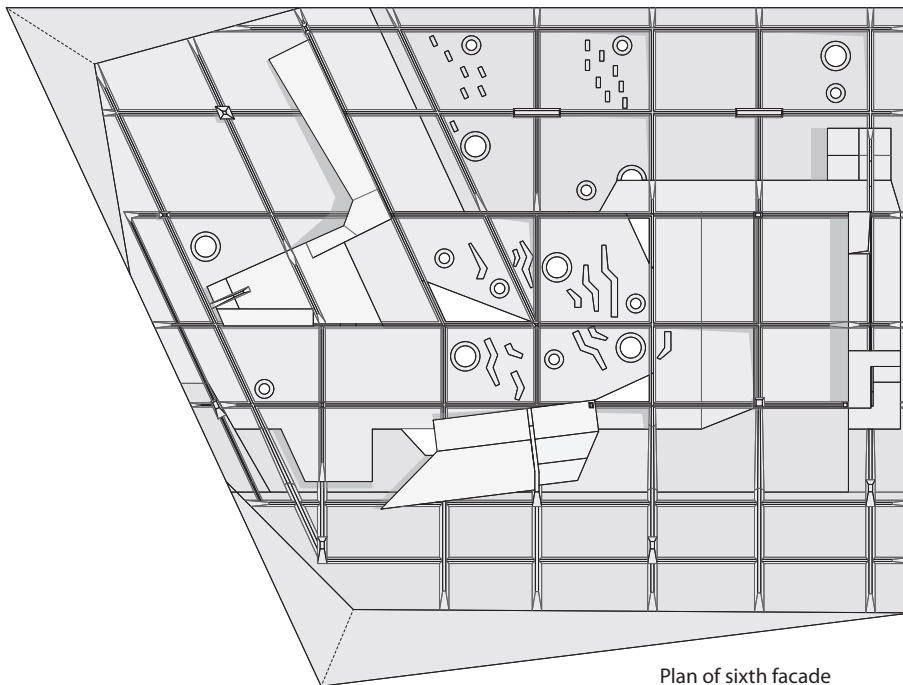
In the shadow of the elevated plate, this level retains a continuity with the urban context while also offering a unique and differentiated environment. Loosely organized by the plate above and the structural or circulation footprints, various spaces are further differentiated by changing scales and light quality. Otherwise remaining as open as possible, the site is able to generate simultaneous but diverse groupings of people and activities while also able to accommodate a single large event.



Plan of programmatic surface

GROUND UP

On the top surface of the sixth facade, the plate formally accommodates more specific programmatic configurations. Additional elements are embedded within or pull out of the plate that act as furniture, equipment, and some instances of enclosure. These help organize program activities and movement.



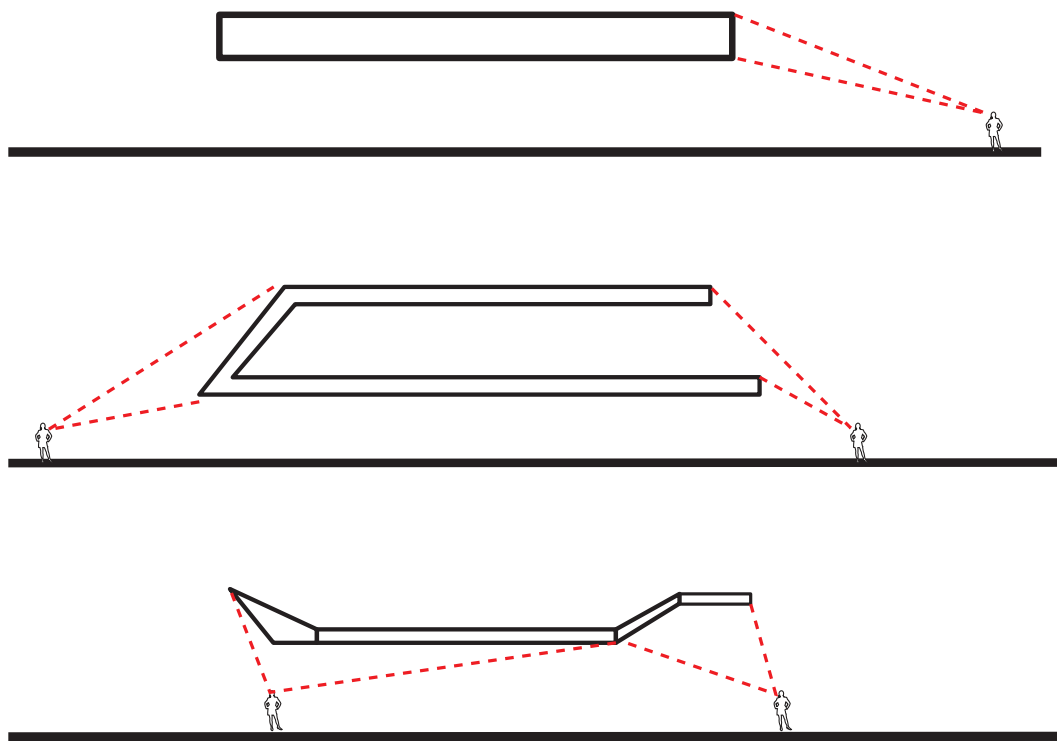
Plan of sixth facade

FACE DOWN

Seeing a facade that hovers above is a new way of approaching a building. Instead of seeing it from across the street, the visitor has to be underneath, which already places them inside the project. In this way, the surface performs like a typical facade, strategically revealing or concealing what is beyond. It does this at openings in the plate where one can get a glimpse of activity above or see a hint of sunlight piercing the plate.

PERCEPTION OF THE EDGES

Experiencing the project at street level, a visitor's perception is entirely mediated by the sixth facade. The plate is manipulated to create an ambiguous reading from the surrounding context, deemphasizing the structure's edges and playing with the visitor's view as they move from the street to the site and into the project. Sloped edges draw the eye to the sixth facade, inviting the visitor to enter or pass through. At the same time, strategic openings establish visual connections between the two levels, reinforcing the visitor's experience of the project as a dynamic public place.



Changes in a visitor's perspective in relation to the external image of the structure.

PUBLIC EVENTS

Beyond the perimeter of those edges, the covered street level is open to appropriation by user activity or larger public events that either occupy the site itself or overflow in from the street.



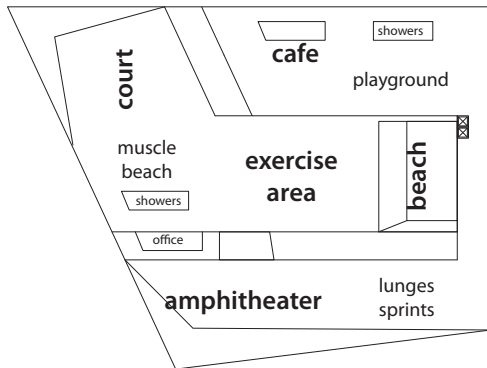
A cycling event takes over Avenida Faria Lima and the site.



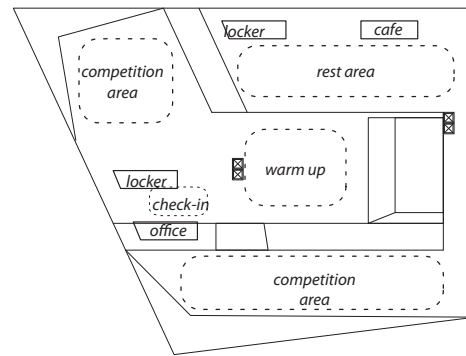
Carnivale.

OPEN TO APPROPRIATION

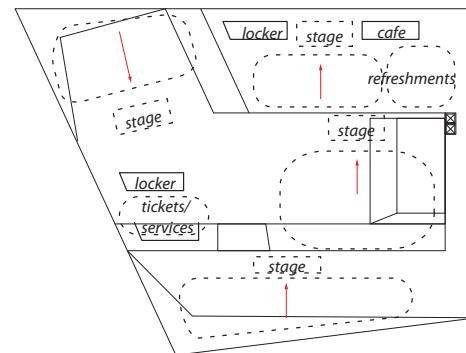
Although the upper surface is more specifically programmed for various recreational activities, it too has some of the open and continuous quality that is present at street level. Other events or programs are able to occupy these spaces by temporarily reappropriating them.



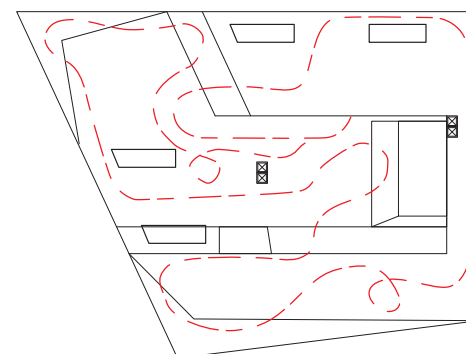
Typical program areas



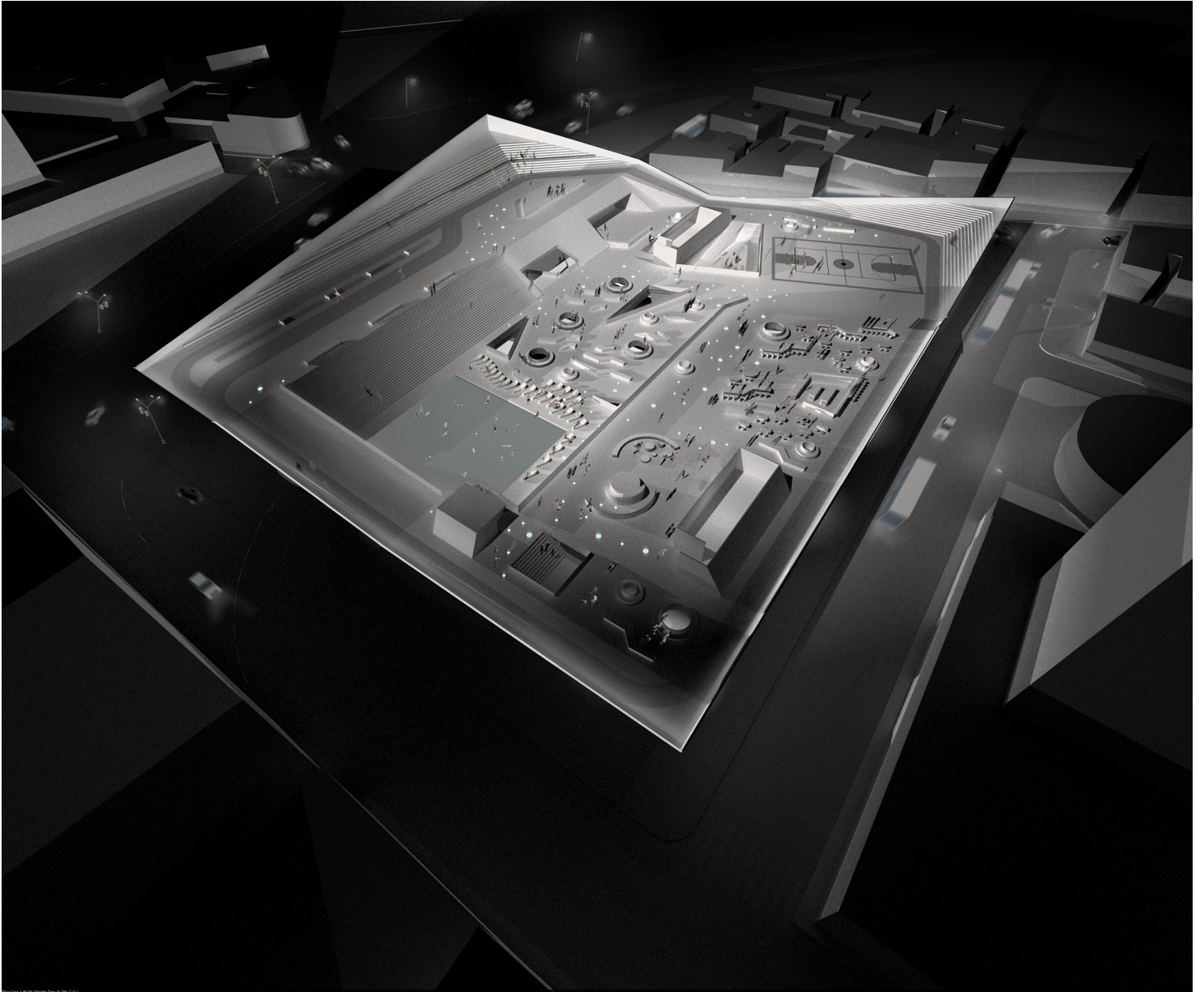
martial arts competition



music festival



skateboarding



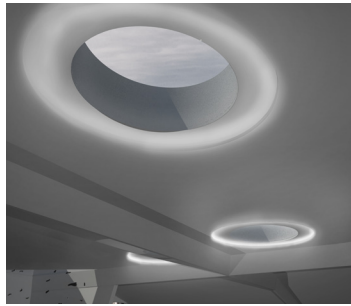
While not visible at street level, the image of the programmatic surface is on full display to those in the neighboring towers who can look down at the spectacle of activity.

MICRO-MANIPULATIONS

Secondary embedded elements in the plate direct how a visitor interacts with the project by creating additional program and connecting the two levels through visual cues and circulation. Embedded furniture organizes activity and movement above while becoming lighting below, and at various points, cuts or punch throughs give a glimpse of activity or hints at the space beyond.



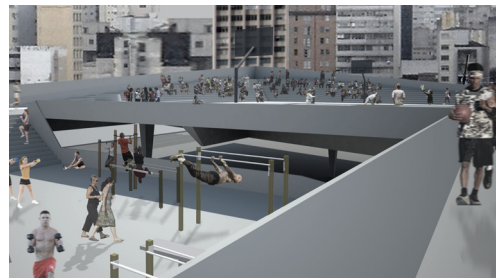
Punch-through



Emboss

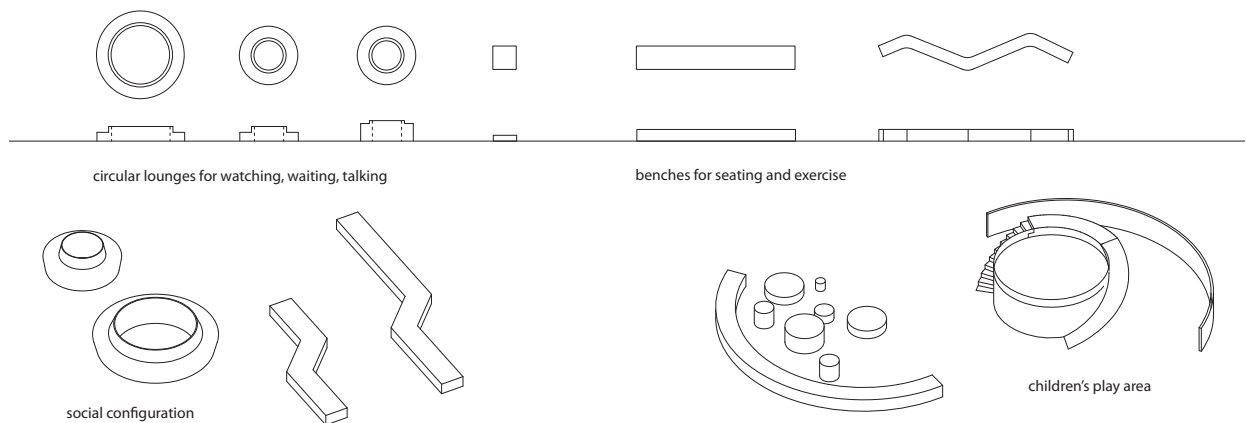


Cut and fold

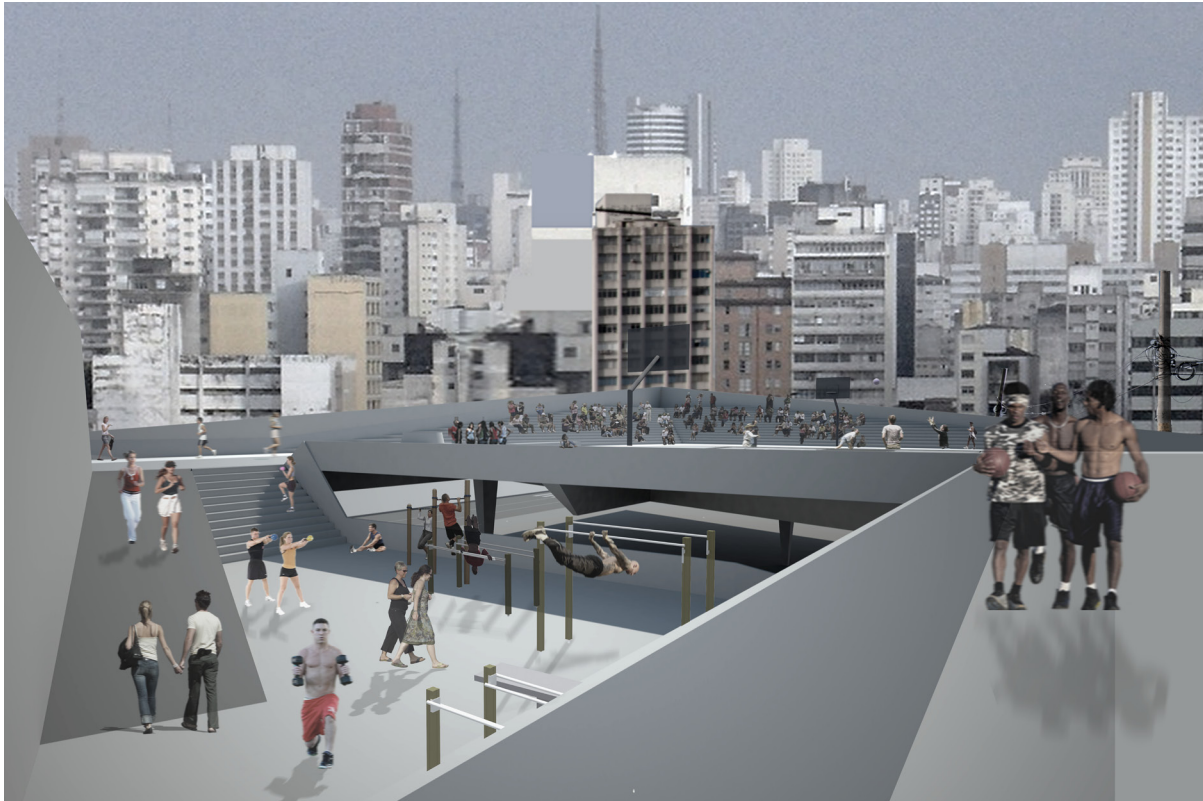


Slice and pull

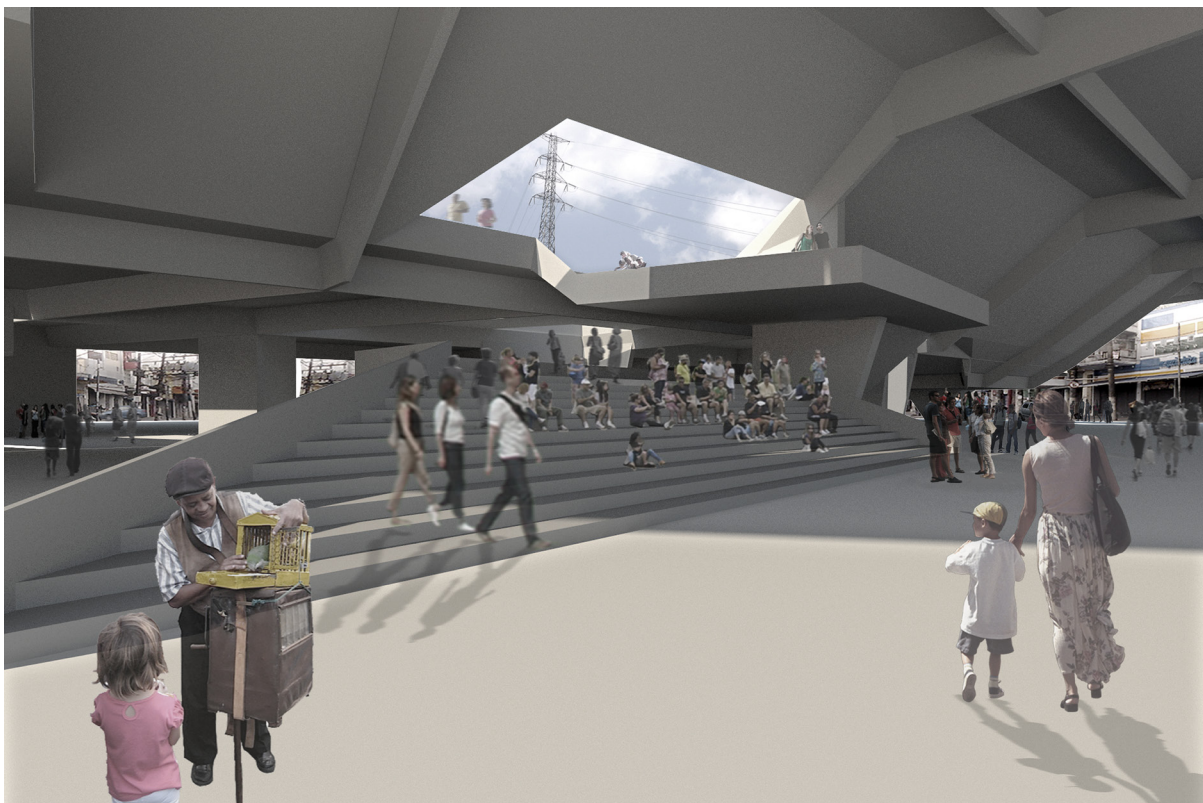
Embedded furniture elements



ABOVE/BELOW: SLICE AND PULL



Workout area with basketball court in the background



Main staircase facing the large avenue

This architectural rendering depicts a modern rooftop pool and lounge area. The space is characterized by a large, light-colored pool deck and a series of white, curved, tiered seating areas that resemble a modern amphitheater. People are shown in various leisure activities: some are swimming in the pool, others are sunbathing on towels or lounge chairs, and some are sitting on the tiered seating. In the foreground, a woman is sitting on the ground reading a book, and a man is walking. The background shows a dense urban environment with tall apartment buildings. The overall atmosphere is one of a sophisticated, high-end recreational space integrated into a city setting.

A large, modern, multi-level public space with a dark, angular ceiling and a large circular skylight. The space is filled with people engaged in various activities like skateboarding, climbing, and walking. The architecture features sharp, geometric forms and integrated lighting.

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ABOVE/BELOW: CREASE AND FOLD



Basketball court and running track

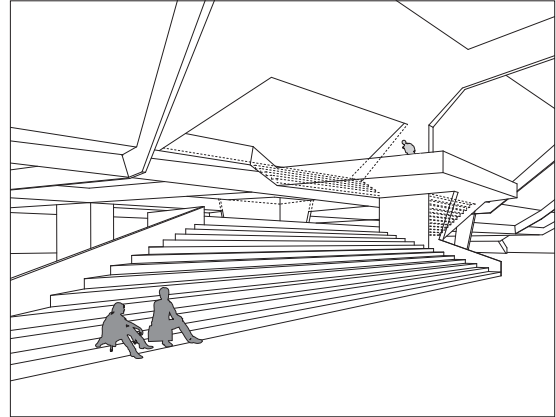


Vaulted space underneath with views through the plate to beyond

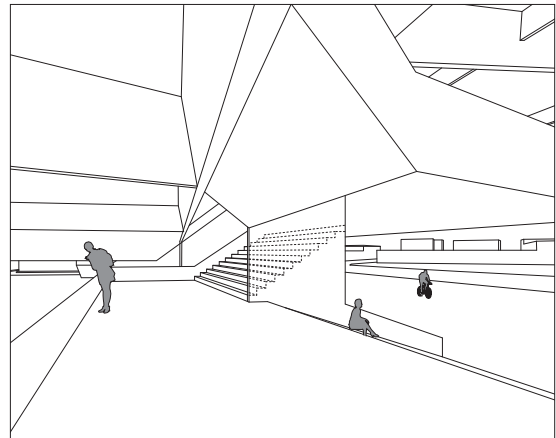
MOVEMENT SERIES

TWISTING INTO

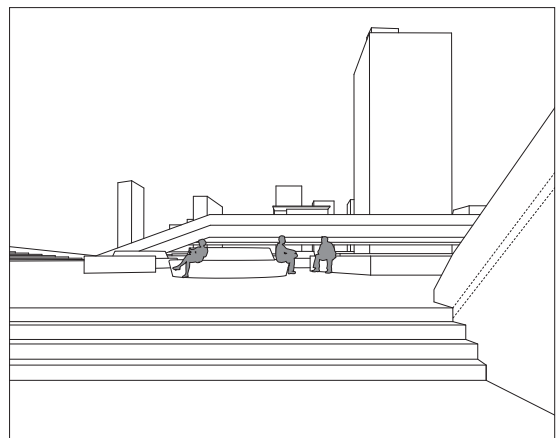
Circulation, such as this large stair facing the busy avenue, draws visitors up and through the project. Moving from one level to another, this stair twists the visitors orientation as they rise, changing their viewpoint and giving them new perspectives of the adjacent spaces.

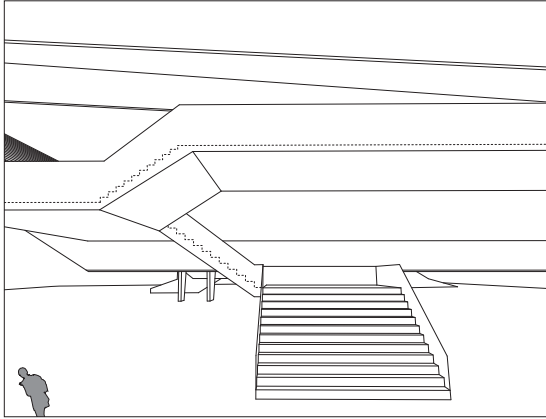


Depending on the nearby activity, the stair can also be occupied and incorporated; for instance it acts as an amphitheater or sitting area facing the spectacle of the street.



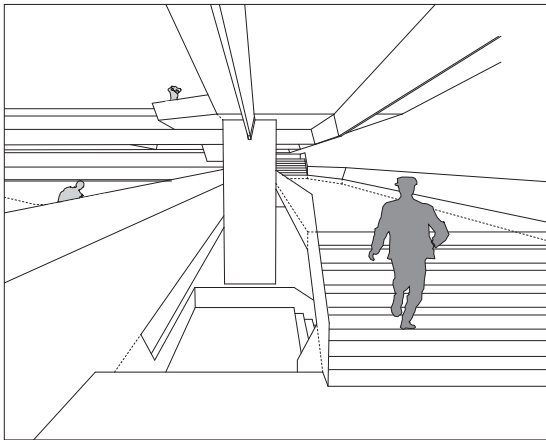
At the top, the compressed pathway expands onto the central area of the plate where the visitor then chooses his or her own path.



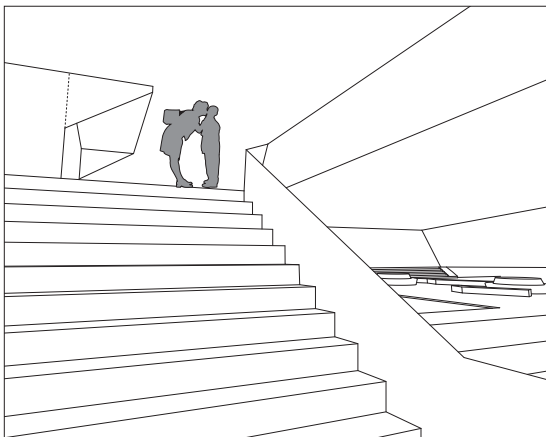


CLIMBING ALONGSIDE

These circulation elements are important moments of transition between the two sides of the plate. Instead of constructing a clear path from point A to B, they offer ambiguous points of entry that, at best, hint at where the path will lead.



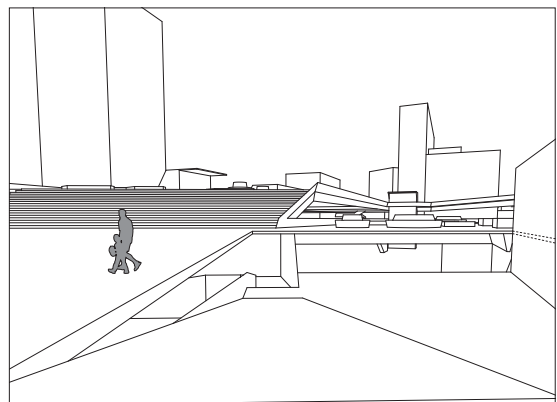
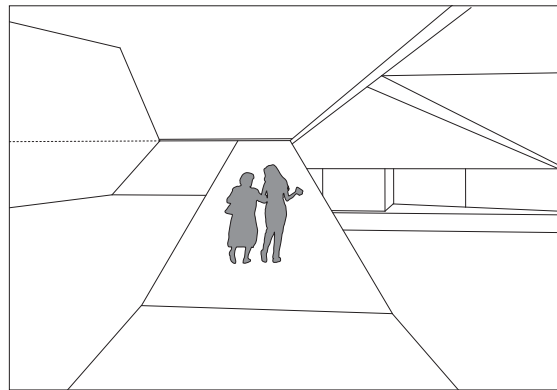
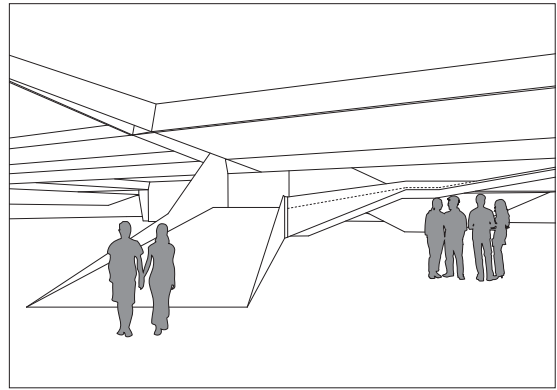
These meandering trajectories circulate people past and through the various spaces that they might not otherwise see or experience with an efficient path.



The visitor gets a sense of the simultaneity of activities, making his or her experience of the project more dynamic and interactive.

RAMPING THROUGH

These elements orchestrate specific ways of moving through the plate as a way of activating the adjacent spaces and the plate itself. When firmly on one side or another, however, circulation is more flexible.





Inspired by the animated collective life in Brazilian cities, this thesis offers a new way of creating open public space in a densifying metropolis. Conserving public use of the ground plane while adding recreation program above, this project condenses outdoor activity on an urban site in order to amplify the experience of public space. The architectural element of the elevated concrete plate with its sixth facade organizes this layered space, encouraging and mixing activities or events so that they generate a dynamic atmosphere of urban life.

4 REFERENCES

BIBLIOGRAPHY

Allen, Stan. "From Object to Field: Field Conditions in Architecture and Urbanism." In *Space Reader: Heterogeneous Space in Architecture*, edited by Michael Hensel, Achim Menges, and Christopher Hight, 118-143. Chichester, U.K.: Wiley, 2009.

Aureli, Pier Vittorio and Martino Tattara. "Architecture as Framework: The Project of the City and the Crisis of Neoliberalism." *New Geographies* 1 (2009): 36 - 51.

Conrads, Ulrich. *Programs and manifestos on 20th-century architecture*. 1964. Cambridge, Massachusetts: MIT Press, 1971.

Le Corbusier. *Toward an Architecture* (Getty, 2007), translation of *Vers une architecture* (1928).

Curtis, William J. R. *Modern Architecture since 1900*, 3rd edition. New York: Phaidon, 1996.

Foucault, Michel. "Of Other Spaces." In *Heterotopia and the City: Public Space in a Postcivil Society*, edited by Michiel Dehaene & Lieven De Caeter. New York: Routledge, 2008.

Frampton, Kenneth and Guilherme Wisnik. *Joao Vilanova Artigas*. 2G International Architecture Review Series 54. Barcelona: Gustavo Gili, 2010.

Gandelsonas, Mario. "The City as the Object of Architecture." *Assemblage* 37 (1998): 128-144.

Koolhaas, Rem. *S, M, L, XL*. New York: The Monacelli Press, 1995.

Mertins, Detlef. "Mies's Event Space" *Grey Room*, 20 (2005): 60-73.

Oliveira, Olivia de. *Lina Bo Bardi: Built Work*, 2G 23. Barcelona: Gustavo Gili, 2003.

Reiser, Jesse and Nanako Umemoto. *Atlas of Novel Tectonics*. New York: Princeton Architectural Press, 2006.

Rossi, Aldo. *The Architecture of the City*, translation of *L'architettura della città* (1966). New York, MIT Press, 1982.

Tschumi, Bernard, ed. *The State of Architecture at the Beginning of the 21st Century*. New York: Monacelli Press, 2003.

Winter, Kate, et al. "Facts on the Ground." *Perspecta* 30 (1999): 106-111.

Zaera Polo, Alejandro. "The Politics of the Envelope: A Political Critique of Materialism." *Volume* 17 (2008): 76-105.

IMAGE CREDITS - All photos or images produced by the author, except:

Office dA. Perspective, New Kuwait Sports Shooting Club. 2006. *nadaa.com*. Web. Dec 2011.

Hadid, Zaha. Rendering, Phaeno Science Center. *Zaha Hadid Architects*. Web. Oct 2011.

Herzog and DeMeuron. Photo, CaixaForum, Madrid. *herzogdemeuron.com*. Web. March 2011.

Le Corbusier. Axonometric drawing, Unite d'Habitation. Fondation Le Corbusier, Paris. *Twentieth-Century Classics*. London: Phaidon, 1999.

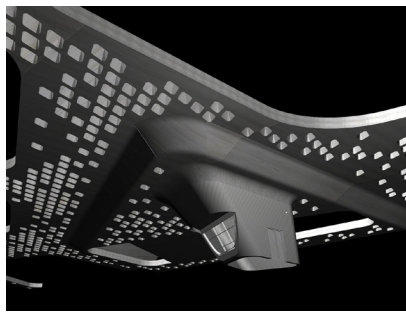
SANAA. Model photo. "Before Architecture, After Architecture exhibition 2009." *Tomio Koyama Gallery.com*. Web. Nov 2011.

CASE STUDIES



MASP / Lina Bo Bardi
São Paulo, Brazil / 1968

Adjacent to a major avenue and elevated on piers, this building creates a public plaza level that invites public use. Architecturally, its surfaces remain flat and undifferentiated - the main characteristics of the space are shade and height.



Phaeno Science Center / Zaha Hadid
Wolfsburg, Germany / 2005

The underbelly of this concrete structure creates an otherworldly atmosphere with its patterned surface. It has qualities of a sixth facade but doesn't have a strong relationship with the program or spaces beyond (above).



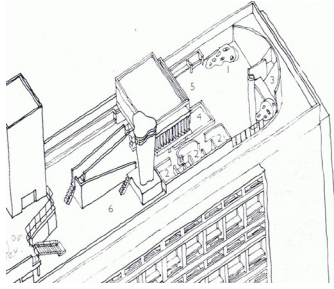
Caixa Forum / Herzog and DeMeuron
Madrid, Spain / 2008

Adjacent to a major avenue and elevated on piers, this building creates a public plaza level that invites public use. Architecturally, its surfaces remain flat and undifferentiated - the main characteristics of the space are shade and height.



Superquadra / Lucio Costa
Brasília, Brazil / 1956

The residential apartment blocks are lifted on pilotis, keeping the ground surface as public ground surface, freely open for anyone to walk across.



Unite d'Habitation / Le Corbusier

Marseille, France / 1952

The 'public' ground is brought up through the building and onto the roof, which is used mostly for recreation. The actual ground below is freed by pilotis, however it isn't an active space.

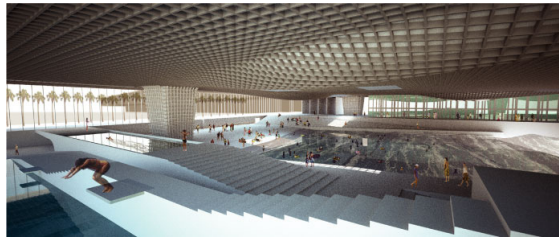


Rolex Learning Center / SANAA

Lausanne, Switzerland / 2010

This project is both a large, open programmatic surface and it sets up an interesting ground to plate relationship by pulling points up and down.

The smoothness reinforces the continuity of space, while my project's angular creases fluctuate between continuity and differentiation.

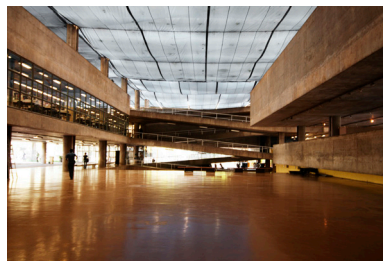


Villa Moda / Office dA

Kuwait / 2006

A fluctuating surface spans over various public activities and an equally changing ground.

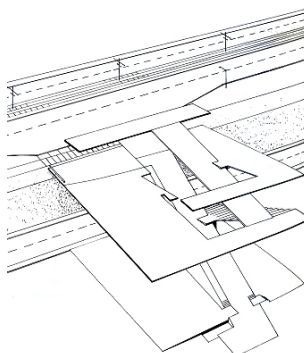
Here, two surfaces create one level of program. This thesis, however, uses one (two-sided) surface to create two different levels.



Faculty of Architecture / Vilanova Artigas

São Paulo, Brazil / 1961

This indoor/outdoor building plays with enclosure and threshold. The inner atrium organizes movement into and up through the building with a large ramp. Visible from most areas of the building, this open atrium (with a light roof covering) also has a public quality, ideal for events and displays.



Kunsthal / OMA

Rotterdam, Netherlands / 1992

In this drawing of the floor plate, the project can be understood as a connected surface that has been cut and pulled to orchestrate movement through the building. The connecting ramp provides changing views and relationships to the adjacent program spaces.

This thesis uses a similar strategy to circulate visitors through the spaces, however it does not simplify movement to a single, dominant path.

5 APPENDICES

BASS WOOD MODEL



THESIS DEFENSE

January 13, 2012



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